

REMARKS/ARGUMENTS

I. Election/Restriction

In response to the Examiner's restriction, Applicants, in a reply filed on August 23, 2004, have withdrawn Claims 1-14, 19, 20, 24 and 26-33, as indicated on page 2 by the Examiner. However, in PTOL-326 Examiner indicates that claim 20 is rejected, not withdrawn. Applicant submits that it should be shown as withdrawn, but if not, please cancel claim 20.

II. Drawings

In the subject Office Action, the Examiner objected to FIGS. 1 and 2 not being labeled as being prior art. As shown in the Annotated Sheets for FIGS. 1 and 2, the Replacement Sheets for FIGS. 1 and 2 now include the label "PRIOR ART".

In FIG. 3, the Examiner objected to the use of reference character "34" for both the wafer and the axis. The axis has been relabeled with a reference character 37. The Examiner objected to the use of reference character "36" for both the surface and the arrow. The arrow has been relabeled with a reference character 38. The "motor 38" has been relabeled as "motor 39". Additionally, reference character "15" was removed. Annotated sheets showing changes and replacement sheets are attached to the end of this response.

III. Specification

In the subject Office Action, the Examiner objected to "wafer 36" on line 7, paragraph 0018, and this has been changed to "wafer 34". The Examiner objected to "pad 52" on line 10, paragraph 0020, and this has been changed to "pad 50".

Due to the changes to the drawings described above, in paragraph 0018, the "axis 34" has been changed to "axis 37", the "arrow 36" has been changed to "arrow 37" and the "motor 38" has been changed to the "motor 39".

IV. Claim Objections

In the subject Office Action, the Examiner objected to claim 12 being dependent on claim 8. Applicant has amended claim 12 to make it dependent on claim 11.

V. Claim Rejections under 35 U.S.C. §102(b)

In the subject Office Action, claims 1, 2, 7-10, 19, 20, 24, 27, 29, 30 and 32 were rejected under 35 U.S.C. §102(b) as being anticipated by Kennedy et al. However, the Examiner indicated that claims 3-6, 11-14, 26, 28, 31 and 33 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants greatly appreciate the Examiner's indication of allowable claims. Applicants respectfully request that Examiner reconsider his rejection to the remainder of the claims based upon the above amendments made to the claims and the following arguments.

A. Independent claims

Relevant to independent claims 1, 24 and 29, the Examiner states that Kennedy teaches the following:

“...the rinse delivery conduit 38 includes a plurality of nozzles 34 and 36 to dispense a rinsing liquid, the plurality of nozzles being configured and positioned to generate a higher flow rate of the rinsing liquid at the end 28 of the rinse delivery conduit 38 proximate to the center than at the end 26 of the rinse delivery conduit 38 distal to the center...”

In response, Applicants would like to make the following points as to why Kennedy does not teach higher flow rates at the end 28 proximate to the center of the polishing pad:

1. No written description directed to flow rates

First, there is no discussion of flow rates in the written description of Kennedy.

**2. Teachings directed angled nozzles, with the angled nozzles
affecting the flow rates**

Second, the relevant teachings of Kennedy are directed toward spreading out the rinsing agent at the end of the fluid delivery arm 24 toward the center of the polishing pad 14 without extending the arm 24 to the center of the polishing pad 14, and are not directed toward increasing the flow rate at the end portion 28 of the arm 24. More specifically, Kennedy teaches that (underlining added):

“In one aspect, at least one nozzle is adapted to deliver a rinse agent to the center of the pad, or near the center of the pad, without the need to extend the arm thereover.” (column 2, lines 41-43).

“The end portion 28 preferably terminates at a position short of the center of the pad 22 to allow the carrier holding the substrate to move radially across the pad approaching or even over the center of the pad during polishing without the risk of having the arm collide with the carrier. A nozzle 36 is disposed on the end portion of the arm at an angle to the plane of the arm to deliver one or more rinse agents to the center of the pad.” (column 4, lines 14-19)

“The end nozzle 36 is disposed at an angle to the plane of the arm, e.g., an acute angle, to deliver a fluid a distance away from the end portion 28 of the arm towards the central portion C of the pad 14.” (column 4, lines 55-58).

“The end nozzle 36 is positioned to deliver fluid outwardly beyond the end of the arm to cover the remaining pad regions, including the central portion of the pad...” (beginning column 2, line 67)

For example, the reduced distance between the last nozzle 34 and the nozzle 36 in Figures 2 and 3A is misleading because the increased flow rate consequences caused by this reduced distance may be eliminated by the decreased flow rate consequences caused by the angle of the nozzle 36 relative to the last nozzle 34. Hence, the flow rates of the liquid as it impinges on the polishing pads in Kennedy will vary to an unknown extent based upon the angles of the nozzles.

3. Nozzles with different spreads of sprays affecting flow rates

Third, the nozzles 34 and 36 have different spreads of their spray, which would suggest different relative flow rates between the nozzles which vary to an unknown extent.

4. Inconsistent and contradictory drawings not directed to flow rates

Fourth, the spacings of the nozzles 34 and 36 shown in the drawings, but not discussed in the written description, do not appear to convey meaningful information about flow rates, nor do they appear to be drawn with an intention to do so. For example, in the embodiment shown in Figures 2 and 3A, the most distal nozzle 34 from the center of the polishing pad is shown very close to the edge of the polishing pad in Figure 2 (suggesting a higher flow rate for that nozzle relative to the impacted surface area of the polishing pad in comparison to other nozzles), but the same nozzle 34 is shown spaced very far from the edge in Figure 3A (suggesting a much lower flow rate for that nozzle relative to the impacted surface area of the polishing pad in comparison to the other nozzles). Consequently, any flow rate variations suggested by the drawings may be just due to poorly prepared drawings that on their face are quite inconsistent. Moreover, any flow rate variation suggested in one figure may be contradicted by another figure for the same embodiment.

5. Amendments to Independent claims 1 and 29

Independent claims 1 and 29 have been amended to recite that there is a higher flow rate of the rinsing liquid against the polishing pad. These amendments emphasize that the higher flow rate is at the polishing surface and not as the liquid leaves the nozzles, which thereafter may vary due to the spray spread and angle of the nozzles, as is the case in Kennedy.

6. Summary of the above five points

In summary, Applicants submit that there are: (1) no teaching in the written description in Kennedy of increasing the flow rate toward the end of the arm proximate to the center of the polishing pad, and (2) no meaningful information on relative flow rates of the nozzles may be extracted from the inconsistent and contradictory drawings,

which have nozzles with varying angles and varying spray spread. Elaborating on the second point, due to drafting variations for the same embodiment on positioning of the nozzles, differing spreads of the spray for different nozzles, differing angles of the nozzles, and no clarifying statements in the written description, Applicants submit that no conclusions as to relative flow rates may be extracted from the drawings of Kennedy.

B. Dependent Claims

Relevant to the rejected dependent claims directed to the embodiment of Figure 5 of Applicants' invention (dependent claims 7, 8, 9, 10, 27 and 32) wherein the spacing between the nozzles at the proximate end is reduced to increase flow rate, the Examiner states that Kennedy teaches:

“...the two nozzles 34 and 36 proximate to the center are spaced-apart by a first distance and the two nozzles 34 distal to the center are spaced-apart by a second distance, the first distance being smaller than the second distance...”

Claims 7, 8, 9, 10, 27, 30 and 32 have been amended to clarify that it is the flow rate of the rinsing liquid as it impinges upon the surface of the polishing pad that is being claimed, and not the flow rate of the rinsing liquid as it leaves the rinse delivery conduit. The varying angles of the nozzles and the width of the sprays as they impact the surface of the polishing pad, as shown in Kennedy, makes a difference as between the flow rates in a plane just under the nozzles verses the flow rates at the surface of the polishing pad, as described above. Hence, these amendments clarify that the relevant plane for measuring the flow rates is the surface of the polishing pad.

VI. Conclusion

Applicant greatly appreciates that the Examiner indicated claims 3-6, 11-14, 26, 28, 31 and 33 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. However, in view of the

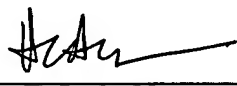
foregoing amendments and arguments, Applicants respectfully request reconsideration of the rejections of claims 1, 2, 7, 8, 9, 10, 24, 27, 29, 30, 32 under 35 U.S.C. §102(b).

The Commissioner is hereby authorized to charge shortages or credit overpayments to Deposit Account No. 500393. A Fee Transmittal is enclosed in duplicate for fee processing purposes.

Respectfully submitted,
SCHWABE, WILLIAMSON & WYATT, P.C.

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Pacwest Center, Suites 1600-1900
1211 SW Fifth Avenue
Portland, Oregon 97204
Telephone: 503-222-9981


Aloysius T.C. AuYeung
Registration No. 35,432



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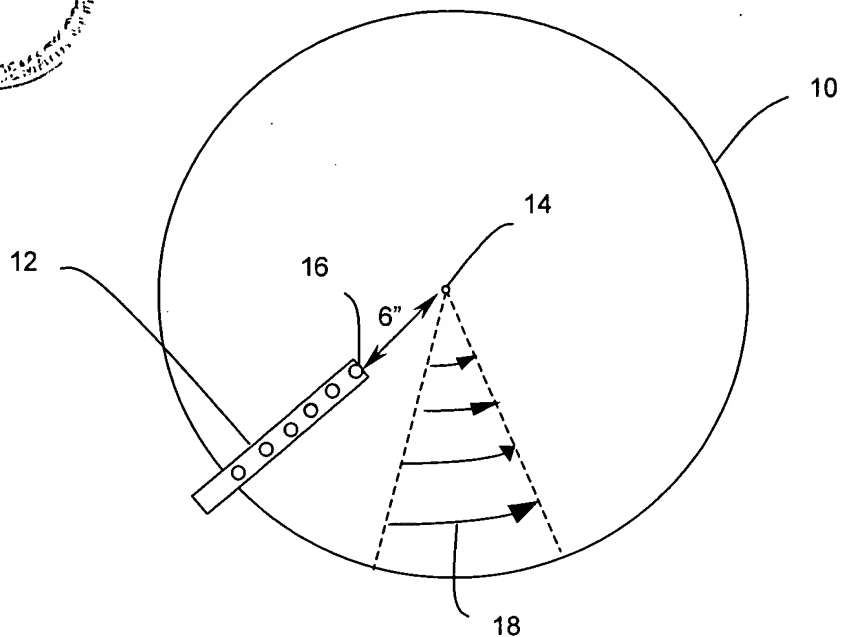


FIG. 1 (PRIOR ART)

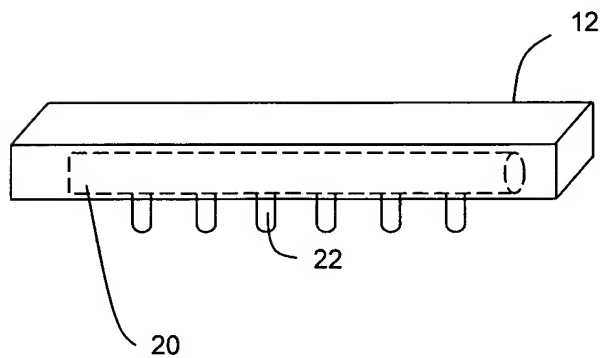


FIG. 2 (PRIOR ART)

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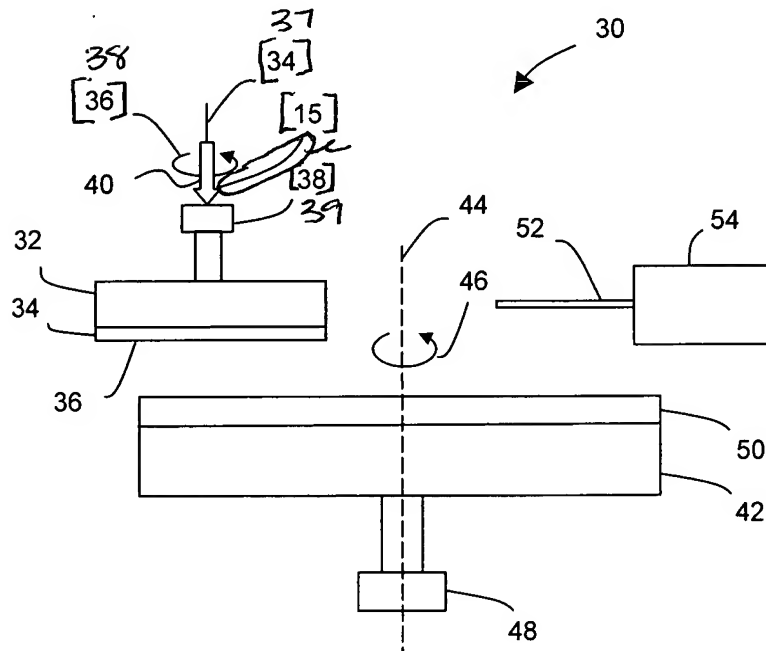


FIG. 3

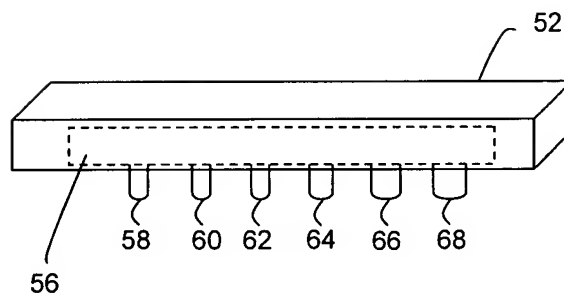


FIG. 4

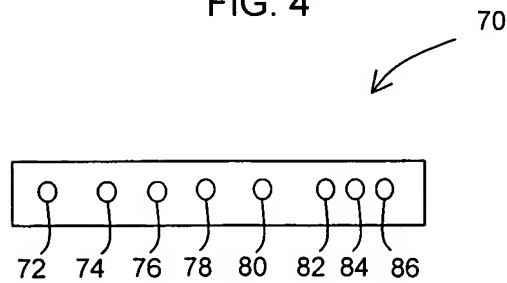


FIG. 5